ADDITIONAL SHEET

CCR#: 05-0094 **Rev:** - **Originator:** M. Corbett
Telephone: 301-925-0703 **Office:** COTS
Title of Change: Early Delivery of IRIX 6.5.26 as TE for GSFC SPG hosts

This TE provides an early delivery of IRIX 6.5.26 to GSFC for g0spg01, g0spg10 and g0spg11 so that the impacts of the IRIX 6.5.26 upgrade on the GSFC DAAC Unique Extensions (DUEs) can be evaluated and worked prior to the final PSR delivery.

Note: This Early Delivery TE is NOT to be installed on any other hosts as there are identified and potential compatibility issues with some COTS products that are still being worked for the final delivery of the IRIX 6.5.26 PSR. None of these COTS products are currently baselined for GSFC SPG hosts and therefore there should be no impact to installation on these SPG hosts.

Additionally, testing has currently occurred only for SPG hosts. It is expected that new issues will be identified during testing on other host types. Therefore, there would be significant risk to installing IRIX 6.5.26 on any other SGI host.

The following NCRs are expected to be resolved with the delivery of the IRX 6.5.26 PSR.

NCR Number	Severity	State	Sub system	Issuing Site	Description
ECSed 41585	3	D	DSS	GSFC	GSFC/SMC:g0acg01 - Need sgi patch 5739 fix for bug 921056 system panic
ECSed 41500	2	T	DSS	GSFC	GSFC/SMC: g0acg01 panic 9/29, 10/25, 10/27 and 11/1

This upgrade is to be installed **ONLY** on the following machines:

- g0spg01
- g0spg10
- g0spg11

Inventory:

The following tar files and CDs will be provided by CM for delivery to GSFC:

Tar File Listing:

Checksum	Size	Filename
657894370	628520960	irix6522_6526_GSFC_TE_distribution.tar

Physical Media:

- IRIX 6.5.26 Distribution Disk
- IRIX 6.5.26 CDs in the following table:

IRIX 6.5.26 CDs

Item	Part Number	CD Title
6.5.26_ovl1	812-0818-026	IRIX 6.5.26 Installation Tools and Overlays 1-of-3
6.5.26_ovl2	812-0819-026	IRIX 6.5.26 Overlays 2-of-3
6.5.26_ovl3	812-0817-026	IRIX 6.5.26 Overlays 3-of-3
6.5.26_apps	812-0877-026	IRIX 6.5 Applications 11/04
6.5.26_compapps	812-1180-026	IRIX 6.5 Complementary Applications 11/04

INSTALLATION INSTRUCTIONS for IRIX 6.5.26 Upgrade for GSFC SPG Hosts

The following provides the installation procedures for a live-upgrade from IRIX 6.5.22 to IRIX 6.5.26 on GSFC SPG hosts.

Prerequisites

- Estimated time needed for upgrade: 1-2 hours per machine (maximum). Upgrades can be done in parallel.
- Disk space requirements: 500-600 MB free space.
- GSFC SPG hosts must be at IRIX 6.5.22.
- Perform full backups of the root disk on target hosts.

  Prior to upgrade, make a full filesystem backup of your boot disk. You have several options.

  1. Perform a level-0 (full) filesystem backup of the root filesystem using Legato Networker. (Recommended)
  2. Using the IRIX utility ‘xfsdump’, dump the contents of the root filesystem to another disk partition or remote filesystem.
  3. Make full filesystem backups using the IRIX ‘Backup’ utility. This backup will allow you to recover your boot disk in case of a failed upgrade (very unlikely) using the ‘Restore’ utility. See the man pages for the Backup and Restore commands for more information on their syntax and capabilities.

```
# Backup -h guest@<host-with-tapedrive>:/dev/tape /
```

- Quiesce ECS software on target hosts. Stop all ECS software that is running locally on the target host, as well as any ECS software that communicates directly with the target host. Provided scripts will perform this activity as noted in the following installation instructions section.
- Install IRIX 6.5.26 Distribution Disk provided with this delivery. Installation instructions provided below assume installation from the Distribution Server.

UnInstall Instructions

None

Installation Instructions

Create a Software Profile for Live Upgrade

Before starting an upgrade of a target host, create a selections file to indicate which software is to be upgraded on your machine (as indicated by site Hardware-Software Maps, 920-TDx-002). This is done via the mkprofile.sh script, which will create a custom selections file from the list of software you select while executing the script.

1. Collect current software configuration on the target host

Run 'versions' on each of your hosts before upgrading and save the output in a corresponding file in /data/dist/var on the distribution host. This versions output will allow the system to detect software that is currently installed and to pre-select this software for installation in the upgrade process. You will have an opportunity to review and change these selections before the upgrade process actually begins.

For example (if host p0spg01 were being upgraded):

```
p0spg01# versions > /tmp/p0spg01.versions ↵
```

2. Store target hosts' software configuration information on distribution server

Use ftp to copy the target host's 'versions' file to the /data/dist/var directory on the distribution host:

```
p0spg01% versions > /tmp/p0spg01.versions ↵
p0spg01% ftp sgidist ↵
Connected to corvette.hitc.com.
220-
220-NOTICE: unknown@p0spg01.hitc.com,
220-************************************************************
220-
```

```
220-THIS U.S. GOVERNMENT COMPUTING SYSTEM IS FOR AUTHORIZED USERS
220-ONLY.  ANYONE USING IT IS SUBJECT TO MONITORING AND RECORDING
220-OF ALL KEYSTROKES WITHOUT FURTHER NOTICE.  THIS RECORD MAY BE
220-PROVIDED AS EVIDENCE TO LAW ENFORCEMENT OFFICIALS.
220-
220-**************************************************************
220-
220 corvette.hitc.com FTP server ready.
Name (sgidist:klange): ↵
331 Password required for klange.
Password: ******  ↵
230 User klange logged in.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp> put /tmp/p0spg01.versions /data/dist/var/p0spg01.versions  ↵
local: /tmp/p0spg01.versions remote: /data/dist/var/p0spg01.versions
200 PORT command successful.
150 Opening BINARY mode data connection for
'/data/dist/var/p0spg01.versions'.
226 Transfer complete.
72623 bytes sent in 0.01 seconds (8676.40 Kbytes/s)
ftp> quit  ↵
221 Goodbye.
```

3. Run mkprofile.sh to create a profile for the target host

As root on the distribution server, run the mkprofile.sh script.

For example, to upgrade/refresh only the software already on your target host, you would enter (using p0spg01 as an example):

```
sgidist# cd /data/dist/bin ↵

sgidist# ./mkprofile.sh p0spg01 ↵

------------------------------------------------------------------------
ECS profile creator for IRIX 6.5 installations & upgrades (covering 6.5.22
and 6.5.26)
------------------------------------------------------------------------

Creating profile for p0spg01.

Using versions file /data/dist/var/p0spg01.versions.

Here is what you have selected for upgrade/refresh on p0spg01:
This information is based on the selections that are already installed on
p0spg01.
```

Note: The objective for the GSFC SPG TE is only to upgrade the IRIX 6.5 operating system to 6.5.26. Other existing COTS product installations should not be modified.

```
IRIX 6.5 base operating system: YES (default)
      IRIX 6.5 Overlay Version: 6.5.22
       Legato Networker Client: Y (7.1.2)
             MIPSpro Compilers: Y (7.3.1.3m)
                           BDS: Y
                      RAID 3.3: Y
     TP9400/9500 RAID Software: N
                 FlexLM Server: N
              IRISConsole 2.0: N

Modify choices, save and exit, or abort?
([m]odify/[s]ave/[a]bort):  m ↵
```

Note: Only the IRIX 6.5 base overlay should be selected for modification for the GSFC upgrade of SPG hosts. No other current product installation should be changed. The profile of p0spg01 is used only as an example.

```
Select from one of the following "Overlay" release revisions of IRIX 6.5:

               (1)IRIX 6.5.22 (old baselined version)
               (2)IRIX 6.5.26 (new baseline version)

Enter the number of the corresponding Overlay release (1,2) [1]:  2 ↵
Do you want to upgrade/refresh Legato Networker? (y/n) [Y]: y ↵
Do you want to upgrade/refresh MIPSpro 7.3.1.3m compilers? (y/n) [Y]:  y ↵

               (1)MIPSPro 7.3.1.3m
               (2)MIPSPro 7.4.2m

Enter the number of the corresponding compiler version (1,2) [1]:  1 ↵
Do you want to install the BDS software? (y/n) [Y]:  y ↵
Do you want to upgrade/refresh the SCSI/FC RAID drivers? (y/n) [Y]: y ↵
Do you want to install the TPSSM RAID Mgmnt software? (y/n) [N]:  n ↵
Do you want to upgrade/refresh the FlexLM server on p0spg01? (y/n) [N]: n ↵
Do you want to install IrisConsole 2.0? (y/n) [N]:  n ↵


Here is what you have selected for upgrade/refresh on p0spg01:
This information is based on the selections that are already
installed on p0spg01.
```

WARNING: While you may modify any of the below selections from (N)o to (Y)es, do NOT modify any of the below selections from (Y)es to (N)o.

```
IRIX 6.5 base operating system: YES (default)
      IRIX 6.5 Overlay Version: 6.5.26
       Legato Networker Client: Y (7.1.2)
             MIPSpro Compilers: Y (7.3.1.2m)
                           BDS: Y
                      RAID 3.3: Y
     TP9400/9500 RAID Software: N
                 FlexLM Server: N
               IRISConsole 2.0: N

Modify choices, save and exit, or abort?
([m]odify/[s]ave/[a]bort):  s ↵

Creating selections file for p0spg01.............done.

Profile has been created for p0spg01.

You are ready to run the upgrade.sh script on p0spg01

Cleaning up...
```

Perform Upgrade In-Place (Live Upgrade)

1. Quiesce ECS Software on target hosts

Stop all ECS software that is running locally on the target host, as well as any ECS software that communicates directly with the target host.

Note: The upgrade.sh script automatically shuts down all ECS software, and major known COTS including AMASS and Sybase.

2. Run the Upgrade Script

On the target host (host to be upgraded), log in as root

```
% su - ↵
Password:
#
```

Run the Live Upgrade script provided on the SGI IRIX Distribution Server utilizing the IRIX 6.5.26 Distribution Disk provided with this delivery. The upgrade.sh script will attempt to notify users of the impending upgrade, quiesce the system (shutdown ECS custom software as well as major COTS), and then upgrade the software according to the profile you created in the pre-installation steps. The script should be accessible via the NFS automounter as /net/sgidist/data/dist/bin/upgrade.sh.

```
# /net/sgidist/data/dist/bin/upgrade.sh ↵

ECS live upgrade script for IRIX6.5
```

```
-----------------------------------------------------

OK: Upgrading p0spg01 from 6.5.22 to 6.5.26.

Press <RETURN> to continue...
Blocking other users from logging in…
Halting ECS software...
Sleeping for 60 seconds...
Halting COTS software...
Connecting to sgidist ...
Connecting to sgidist ...
Reading product descriptions ..  13%
Reading /var/inst/hist
Reading product descriptions ..  25%
Reading product descriptions .. 100% Done.
Importing selections from
/net/sgidist/data/dist/selections/hosts/p0spg01.sel.
Pre-installation check ..   100 Done.
Checking space requirements ..  100% Done
Installing/removing files .. 10%
.
.
.

Installing/removing files .. 100% Done.
Installations and removals were successful.

If the above upgrade was successful, please shutdown the machine
(autoconfig -f NOT necessary).
```

Now that the upgrade is complete, complete steps in the following Post-upgrade Configuration section.

Post-upgrade Configuration

Configuration of the installed software requires several steps. To perform these steps you will utilize routines provided by the OS as well as one custom script.

Note: Scripts should be run in single user mode.

1. Verify and Set Timezone

Verify that the timezone variable (TZ) in your current shell is set appropriate to your location. For example, to set the timezone variable to Eastern time:

```
# echo $TZ ↵
EST5EDT
```

If the TZ (timezone) variable is not correct, change it as per syntax of your current shell.

2. Verify and Set Date and Time

Once you've loaded/upgraded a host with the IRIX operating system, verify the date and time, and change if necessary. For example:

```
# date
Mon Feb 16 17:27:53 EDT 2005
# date 0216173005 ↵          (this uses the mmddHHMMyy format -- you may
                              also use 4 digits for the year)
```

3. Run ECS Configuration Script

After installing or upgrading your IRIX operating system, there are a number of configuration steps that must be performed. These configuration steps are automated with the config_irix6.5 script that was custom written for ECS. After you have verified/set the timezone, date and time run the config_irix6.5 script.

Note: In the following script command, specify the -u option if you are configuring a machine that was upgraded. The -u option will not change configuration files that are already properly configured such as /etc/hosts, networking, etc. ***Do NOT*** specify the -u option on a machine that has been installed clean with IRIX 6.5.

Run the following ECS Configuration script:

```
# /usr/local/bin/config_irix6.5 [-u] ↵
```

Execution of the script is straightforward and if you answer anything incorrectly, simply break out of it with <control>-C and rerun the script.

4. Updating Configuration Files

After upgrading a host, you *must* update/merge configuration files as required.

NOTE: This step is critical to fully complete an upgrade !

IRIX 6.5.26 Note: Some configuration files are being changed with IRIX 6.5.26. When working the following steps, it is recommended that the new configuration files be reviewed to assure that all the changes in the new configuration files are desired.

Some files in a product are called configuration files and are handled specially during installation because they contain system or site-specific information. As a result of this, .O (older) and .N (newer) versions of configuration files may be left on your system after an installation.

When you reboot your system, a check for .O and .N files is done. If any are present, a message is displayed suggesting that you merge configuration files in cases where there are two versions.

The trickiest files to merge are the inetd.conf file, the syslog.conf (remember to use <tab> characters), and the root cron tab files. It is best that you fully understand what you are doing with regards to the contents and syntax of these files. If you do not understand how to proceed, find someone who can assist you.

To merge configuration files, first enter the command:

```
# versions changed ↵
```

If the output contains any .O configuration files:

> The .O version of the configuration file is your earlier version. The no-suffix version contains changes that are required for compatibility with the rest of the newly installed software, that increase functionality, or that fix bugs. You should use diff(1) or gdiff(1) to compare the two versions of the files and transfer information that you recognize as machine or site-specific from the .O version to the no-suffix version.

If you have any .N configuration files:

> The .N version of the configuration file is the new version. It contains changes or new features that can be added to the no-suffix version of the configuration file at your option. You should use diff(1) or gdiff(1) to compare the two versions of the files and add changes that appeared in the new software from the .N version to the no-suffix version if you want them. Note: if you did not merge configuration files after a previous installation, you should compare the timestamps on the files to make sure that the .N file is really a more recent version of the file. A shell command such as ls -l file file.N will display the modification time of each file.

If you have both a .O and a .N version of a particular file:

> This indicates that either the .O file or the .N file is leftover from a previous installation session, and was never merged. Use caution, since the .N file might actually be older than the .O file. Use a command such as ls -l file file.O file.N to display the modification time of each file, and to determine which version of the file was most recently installed by inst(1).

After you have examined the .O and .N configuration files and made any changes you want, you can delete the .O and .N versions of the configuration files. If you want to keep them, you should rename them because they might be removed automatically during the next software installation. If you remove all of the .O and .N configuration files, then no message about configuration files appears when you boot your system. The message also stops appearing even if .O or .N files continue to exist after some number of reboots.

(***Note:*** Versions remove fails if there is no space in /usr to create temporary files.)

5. Verify new Kernel and Reboot

Verify that a new kernel has been built (/unix.install). If not, run 'autoconfig –f' to force a new kernel to be built.

```
# autoconfig –f ↵
```

After verifying the new kernel, reboot

```
# /etc/shutdown –y –g0 –i6 ↵
```

Note: After reboot, you may not be able to login as root on console. If this is the case, check the /etc/default/login. If needed, change **console = /dev/ttyd1**.

Post-Installation Software Verification

Once the installation and configuration is complete, use the versions command to determine which software has been installed on the host:

```
p0spg01# versions ↵
```

Compare the output of this command against the Hardware-Software Map (920-TDx-002) for your site. If any of the required software that is bundled with the OS installation is missing, load the required COTS software by logging in as root and typing the following command:

```
# /net/sgidist/data/dist/bin/installcots.sh ↵
```

For the GSFC TE, only the IRIX Operating System should have been upgraded to IRIX 6.5.26.

After the script is finished, reboot.

Distribution Server Post Operating System Installation Configuration

Once all upgrade activities are complete, return the distribution server to its normal configuration by disabling bootp forwarding, TFTP, and the guest account by running the "configdistsrv" script. You must be super user to do this.

```
# cd /data/dist/bin ↵
# configdistsrv.sh off ↵
```

Custom Code Integration

None

Interrogation Checkout

IRIX 6.5.26 OS Interrogation Checkout

1. To verify the IRIX 6.5.26 operating system version as it will be during the audit process, enter:

   ```
   # uname -R | awk '{print $2}' ↵
   ```

   The returned string should be:

   ```
   6.5.26
   ```

2. To verify which individual patches are installed, enter:

   ```
   #/usr/sbin/versions –b | /usr/bin/grep "patchSG0" | cut –c 43-51 ↵
   ```

   The returned list will vary from machine to machine but should look as follows:

   ```
   SG0005700
   SG0005731
   SG0005759
         .
         .
         .
   ```

Refer to 911-TDA-010-Rev00 (SGI IRIX 6.5.26 O/S Patches) for a complete list of patches in this delivery. Please note the Rev. number of this document, as additional patches are expected to be added before the final PSR delivery and patches added in later revisions of this document will not have been included in the current delivery.

Back-Out Instructions

To recover a system disk from a failed upgrade, you have three options depending on which option was used to backup the system during preparation as identified in the Prerequisites section.

- Use Legato Networker's procedures for recovering a system disk.
- Use the xfsrestore utility to restore the root filesystem from the xfsdump that was made prior to upgrade.
- Use the tape backups from the 'Backup' command made prior to the upgrade. Follow the procedures for 'Recovering Data After System Corruption in IRIX Admin: Backup, Security, and Accounting' book found on http://techpubs.sgi.com, document number: 007-2862-00.

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Test Report

The PVC Science Processor platforms p0spg01 and p0spg07 were upgraded to IRIX 6.5.26 on February 11, 2005. Between that time and March 3, 2005, custom code servers on these machines have been exercised extensively. Stability and load testing has been performed for the EDC scenario, which utilizes PDPS and the Toolkit. Over 1,000 data processing requests completed successfully for PDPS. Both On Demand and Routine processing requests were successfully completed on both p0spg01 and p0spg07. Stability and load testing was also performed for the GSFC (EOC) scenario, which utilizes S4P and the SDSRV SCLI. 30,000 granules were successfully process for each day of a three day test period on both p0spg01 and p0spg07. In addition, several MODIS PGEs were successfully built and run on p0spg07. No problems occurred, and no NCRs were written pertaining to this IRIX upgrade.